



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2012-0079; Directorate Identifier 2012-NE-06-AD; Amendment 39-17148; AD 2012-16-01]**

**RIN 2120-AA64**

**Airworthiness Directives; Pratt & Whitney Division Turboprop Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** We are adopting a new airworthiness directive (AD) for Pratt & Whitney Division PW4052, PW4152, PW4056, PW4156A, PW4060, PW4060A, PW4060C, PW4062, PW4062A, PW4158, PW4460, PW4462, PW4164, PW4164C, PW4164C/B, PW4168, and PW4168A turboprop engines with certain high-pressure turbine (HPT) stage 1 front hubs installed. This AD was prompted by Pratt & Whitney's updated low-cycle-fatigue analysis that indicated certain HPT stage 1 front hubs could initiate a crack prior to the published life limit. This AD requires removing the affected HPT stage 1 front hubs from service using a drawdown plan. We are issuing this AD to prevent failure of the HPT stage 1 front hub, which could lead to an uncontained engine failure and damage to the airplane.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** For service information identified in this AD, contact Pratt & Whitney, 400 Main St., East Hartford, CT 06108; phone: 860-565-7700; fax: 860-565-1605. You

may view this service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Document Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** James Gray, Aerospace Engineer, Engine Certification Office, FAA, 12 New England Executive Park, Burlington, MA; phone: 781-238-7742; fax: 781-238-7199; e-mail: [james.e.gray@faa.gov](mailto:james.e.gray@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that would apply to the specified products. That NPRM published in the Federal Register on March 23, 2012 (77 FR 16967). That NPRM proposed to require removing the affected HPT stage 1 front hubs from service using a drawdown plan.

#### **Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal and the FAA's response to each comment.

### **Support for the NPRM**

One commenter, The Boeing Company, supported the contents of the proposed AD (77 FR 16967, March 23, 2012), as written.

### **Request to Modify Applicability**

Commenters United Airlines, United Parcel Service Co. (UPS), Pratt & Whitney (P&W), and MNG Airlines requested that part numbers (P/Ns) 52L301 and 51L201-021 be added to the applicability paragraphs (c)(1) and (c)(2) of the proposed AD (77 FR 16967, March 23, 2012). The commenters noted that the applicability of the proposed AD is inconsistent since it includes some assembly P/Ns and some detail P/Ns.

We agree. We revised the applicability paragraphs of this AD to include the referenced P/Ns for consistency.

### **Request to Change Compliance Time**

Commenters UPS, MNG Airlines, and Onur Air requested that the compliance time be changed to “at next piece-part exposure after the effective date of this AD or before accumulating the number of cycles listed in this AD, whichever occurs later.” MNG Airlines indicated that its engines would lose 1,382 flight cycles, which would cost more than \$1,000,000 and force early shop visits. Onur Air noted that its engines would lose 1,300 cycles and it would cause stub life problems on other life limited parts. UPS also expressed its concern over the increased shop burden from a hub life reduction.

We do not agree. We determined that removal of the HPT stage 1 front hubs according to the compliance times in paragraph (f) of this AD provides an acceptable level of safety for the fleet. This acceptable level of safety would not be maintained if all HPT stage 1 front hubs were allowed to remain in service until the next piece-part exposure above the number of cycles listed in this AD. For this reason, we also cannot adjust the compliance time to account for potential stub life problems that might occur in the other rotors. We did not change the AD.

### **Request to Reference the PW4000 Engine Manual Chapter 05 Life Limits**

Commenters MNG Airlines and P&W requested that the phrase “former life limits cannot be exceeded” be added to compliance paragraphs (f)(1)(ii) and (f)(2)(ii) of the proposed AD (77 FR 16967, March 23, 2012), or that some other reference to the PW4000 Engine Manual Chapter 05 life limits be added when the stage 1 front hub is operating during the 1,000 cycle drawdown. United commented that a reference to the reduced life limits be included in Chapter 05 of the Airworthiness Limitations Section (ALS) of the PW4000 Engine Manual.

We do not agree. The Chapter 05 life limits cannot be exceeded. For those hubs beneath the Chapter 05 life limit, this AD requires removal according to the drawdown schedule in the AD, which is before the Chapter 05 limit is reached. This AD’s requirements are independent from the Chapter 05 life limits in the ALS of the PW4000 Engine Manual. We did not change the AD.

### **Request Revisions to Service Information to be Incorporated by Reference**

P&W, UPS, and United requested revisions to the service information that is incorporated by reference in the AD. P&W requested that the AD reference the new P&W Alert Service Bulletin (ASB) No. PW4ENG A72-821, dated July 6, 2012 and P&W ASB No. PW4G-100-A72-246, dated June 28, 2012, which address the unsafe condition and contain the affected part numbers by serial number for the PW4000-94” and PW4000-100” engines. UPS also asked that the AD be revised to note that any subsequent revision of the service bulletin (SB) can be used for compliance.

We agree in part. Our proposed AD (77 FR 16967, March 23, 2012), referenced the P/N-serial number (S/N) tables of affected parts in the old SBs. We agree that we should use the new P&W SBs. We changed paragraph (c) of this AD to incorporate the P/N-S/N tables from the new P&W ASBs, specifically from P&W ASB No. PW4ENG

A72-821, dated July 6, 2012 and P&W ASB No. PW4G-100-A72-246, dated June 28, 2012.

We disagree that the AD should be revised to incorporate future revisions of an ASB because we do not know the contents of SBs not yet published. We did not change the AD based on UPS's comment.

#### **Request to Modify Compliance Wording**

P&W requested that the phrase "or at the next piece-part exposure after the effective date of this AD, whichever occurs first" be removed from the compliance paragraphs (f)(1)(ii) and (f)(2)(ii). P&W indicated that, based on the proposed AD, operators may not be able to run HPT stage 1 front hubs, identified in paragraphs (c)(1)(i) and (c)(1)(ii), that are exposed at piece-part between 17,000 and 18,000 cycles-since-new (CSN) and HPT stage 1 front hubs, identified in paragraphs (c)(2) and (c)(3), that are exposed between 12,700 and 13,700 CSN, to the full 1,000 cycle drawdown.

We partially agree. We agree that the AD if adopted as proposed could have forced removal of HPT stage 1 front hubs prior to reaching 18,000 CSN and 13,700 CSN, respectively. We disagree that we should remove the at piece-part exposure wording from paragraphs (f)(1)(ii) and (f)(2)(ii) of the AD, because HPT stage 1 front hubs that are exposed at piece-part after 18,000 CSN and 13,700 CSN should not go back into service, even if they have not accumulated an additional 1,000 cycles in service. We therefore, revised paragraphs (f)(1)(ii) and (f)(2)(ii) of the proposed AD (77 FR 16967, March 23, 2012), to clarify that these HPT stage 1 front hubs should be removed at the next piece-part exposure above 18,000 CSN and 13,700 CSN, respectively, rather than at the next piece-part exposure after the effective date of the AD. This change is consistent with the installation prohibition for HPT stage 1 front hubs in paragraph (g) of this AD.

#### **Request for Allowance for Mixed-Model Management**

United asked that the AD include an allowance for mixed-model management.

We do not agree. The AD does not restrict use of mixed-model management. If an operator uses mixed-model management, then 18,000 CSN and 13,700 CSN should be used in the calculation for the respective engine models included in paragraph (c) of this AD. We did not change the AD.

#### **Request to Add Credit for Prior Compliance**

FedEx Express (FedEx) asked that the AD include credit for compliance to prior SBs.

We do not agree. Operators can take credit for previous actions based on paragraph (e) of this AD. We did not change the AD.

#### **Request to Clarify Requirements for P/N 51L901**

FedEx asked that the AD requirements for stage 1 front hub, P/N 51L901, be clarified. FedEx claimed that the relevant service information section of the AD and its applicability are contradictory.

We do not agree. We reviewed the P/N references and find no contradictions between the two sections. We did not change the AD.

#### **Revision to Cost of Compliance**

In reviewing our cost of compliance estimate made in the NPRM (77 FR 16967, March 23, 2012), we found that our estimate was wrong. Specifically, we found that we based our estimate on the number of engines installed on airplanes worldwide rather than just on the U.S. fleet. Therefore, we changed our estimate to reflect U.S. operators only. This change reduced the number of engines affected from 954 to 289 and the total cost estimate from \$23,049,537 to \$6,981,578.

#### **Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting the AD with the

changes described previously. We also determined that these changes will not increase the economic burden on any operator nor increase the scope of the AD.

### **Costs of Compliance**

We estimate that this AD would affect 289 engines installed on airplanes of U.S. registry. About 183 engines use a 20,000 CSN life limit for the HPT stage 1 front hub. For these engines, we estimate the lost part life to have a value of about \$25,400 per engine. About 106 engines use a 15,000 CSN life limit. For these engines, we estimate the lost life to have a value of about \$22,013 per engine. Based on these figures, we estimate the total cost of the AD to U.S. operators is \$6,981,578.

### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

**List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

**Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

**PART 39 - AIRWORTHINESS DIRECTIVES**

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

**§ 39.13 [Amended]**

- 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

2012-16-01 **Pratt & Whitney Division**: Amendment 39-17148; Docket No. FAA-2012-0079; Directorate Identifier 2012-NE-06-AD.

**(a) Effective Date**

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

None.



**(c) Applicability**

This AD applies to the following Pratt & Whitney Division turbofan engines:

(1) PW4052, PW4152, and PW4056 turbofan engines, including models with any dash number suffix, with a high-pressure turbine (HPT) stage 1 front hub part number (P/N) listed in Table 1 to paragraph (c) of this AD installed.

(2) PW4156A, PW4060, PW4060A, PW4060C, PW4062, PW4062A, PW4158, PW4460, and PW4462 turbofan engines, including models with any dash number suffix, with an HPT stage 1 front hub P/N listed in Table 1 to paragraph (c) of this AD installed.

**Table 1 to paragraph (c)**

P/N 51L601	All serial numbers (S/Ns).
P/N 52L401	With a S/N not listed in Table 5 of the Accomplishment Instructions of Pratt & Whitney Alert Service Bulletin (ASB) No. PW4ENG A72-821, dated July 6, 2012.
P/N 51L201, P/N 51L201-001, P/N 51L201-021	All S/Ns.
P/N 51L901, P/N 52L301	With an S/N not listed in Table 7 of the Accomplishment Instructions of Pratt & Whitney ASB No. PW4ENG A72-821, dated July 6, 2012.

(3) PW4164, PW4164C, PW4164C/B, PW4168, and PW4168A turbofan engines with an HPT stage 1 front hub, P/N 51L901, installed with an S/N not listed in Table 3 of the Accomplishment Instructions of Pratt & Whitney ASB No. PW4G-100-A72-246, dated June 28, 2012.

**(d) Unsafe Condition**

This AD was prompted by Pratt & Whitney's updated low-cycle-fatigue analysis that indicated certain HPT stage 1 front hubs could initiate a crack prior to the published life limit. This AD requires removing the affected HPT stage 1 front hubs from service using a drawdown plan. We are issuing this AD to prevent failure of the HPT stage 1 front hub, which could lead to an uncontained engine failure and damage to the airplane.

**(e) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(f) Removal of HPT Stage 1 Front Hubs From Service**

(1) For HPT stage 1 front hubs listed in paragraph (c)(1) of this AD, do the following:

(i) If the HPT stage 1 front hub has accumulated 17,000 or fewer cycles-since-new (CSN) on the effective date of this AD, remove the HPT stage 1 front hub from service before accumulating 18,000 CSN.

(ii) If the HPT stage 1 front hub has accumulated more than 17,000 CSN on the effective date of this AD, remove the HPT stage 1 front hub from service before accumulating an additional 1,000 cycles-in-service (CIS) or at the next piece-part exposure above 18,000 CSN, whichever occurs first.

(2) For HPT stage 1 front hubs listed in paragraphs (c)(2) and (c)(3) of this AD, do the following:

(i) If the HPT stage 1 front hub has accumulated 12,700 or fewer CSN on the effective date of this AD, remove the HPT stage 1 front hub from service before accumulating 13,700 CSN.

(ii) If the HPT stage 1 front hub has accumulated more than 12,700 CSN on the effective date of this AD, remove the HPT stage 1 front hub from service before

accumulating an additional 1,000 CIS or at the next piece-part exposure above 13,700 CSN, whichever occurs first.

**(g) Installation Prohibition**

After the effective date of this AD, do not install into any engine any HPT stage 1 front hubs listed in paragraph (c)(1) of this AD that are at piece-part exposure and exceed 18,000 CSN, or any HPT stage 1 front hubs listed in paragraphs (c)(2) and (c)(3) of this AD that are at piece-part exposure and exceed 13,700 CSN.

**(h) Definition**

For the purpose of this AD, piece-part exposure means that the part is completely disassembled and removed from the engine.

**(i) Alternative Methods of Compliance (AMOCs)**

The Manager, Engine Certification Office, may approve AMOCs for this AD. Use the procedures found in 14 CFR 39.19 to make your request.

**(j) Related Information**

For more information about this AD, contact James Gray, Aerospace Engineer, Engine Certification Office, FAA, 12 New England Executive Park, Burlington, MA; phone: 781-238-7742; fax: 781-238-7199; e-mail: james.e.gray@faa.gov.

**(k) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the following service information under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use the following service information to do the actions required by this AD, unless the AD specifies otherwise:

(i) Pratt & Whitney Alert Service Bulletin (ASB) No. PW4ENG A72-821, dated July 6, 2012.

(ii) Pratt & Whitney ASB No. PW4G-100-A72-246, dated June 28, 2012.

(3) For service information identified in this AD, contact Pratt & Whitney, 400 Main St., East Hartford, CT 06108; phone: 860-565-7700; fax: 860-565-1605.

(4) You may review this service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

(5) You may also review the service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:

<http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Burlington, Massachusetts, on July 26, 2012.

Peter A. White,  
Manager, Engine & Propeller Directorate,  
Aircraft Certification Service.

[FR Doc. 2012-20842 Filed 08/23/2012 at 8:45 am; Publication Date: 08/24/2012]